CLAIMS

What is claimed is:

1. An apparatus, comprising:

one or more light sources;

one or more long period Bragg gratings that are optically coupled with the one or more light sources; and

one or more amplification fibers that are optically coupled with the one or more long period Bragg gratings;

wherein one or more of the one or more light sources send one or more pump optical signals to one or more of the one or more long period Bragg gratings;

wherein the one or more of the one or more long period Bragg gratings transmit the one or more pump optical signals to one or more of the one or more amplification fibers;

wherein the one or more of the one or more amplification fibers absorb one or more of the one or more pump optical signals and emit one or more output signals;

wherein the one or more of the one or more long period Bragg gratings attenuate one or more of the one or more output signals.

2. The apparatus of claim 1, wherein the one or more pump optical signals comprise a substantially same first wavelength, wherein the one or more output signals comprise a substantially same second wavelength;

wherein the one or more of the one or more long period Bragg gratings comprise one or more wavelength attenuation ranges that omit the substantially same first wavelength and comprise the substantially same second wavelength;

wherein the one or more of the one or more long period Bragg gratings transmit the one or more pump optical signals to the one or more of the one or more amplification fibers;

wherein the one or more of the one or more long period Bragg gratings attenuate the one or more of the one or more output signals.

3. The apparatus of claim 2, wherein the one or more wavelength attenuation ranges comprise a plurality of wavelength attenuation sub-ranges, wherein the plurality of wavelength attenuation sub-ranges comprise zero or more wavelength attenuation sub-ranges that overlap.

4. The apparatus of claim 1, wherein the one or more long period Bragg gratings comprise a first long period Bragg grating and a second long period Bragg grating, wherein the one or more of the one or more long period Bragg gratings comprise the first long period Bragg grating and omit the second long period Bragg grating;

wherein the first long period Bragg grating attenuates the one or more of the one or more output signals;

wherein the one or more of the one or more amplification fibers receive the one or more pump optical signals and transmit one or more residual signals to the second long period Bragg grating;

wherein the second long period Bragg grating attenuates one or more of the one or more residual signals.

5. The apparatus of claim 4, wherein the one or more output signals comprise one or more first output signals and one or more second output signals;

wherein the one or more of the one or more amplification fibers direct the one or more first output signals toward the first long period Bragg grating and the one or more second output signals toward the second long period Bragg grating;

wherein the first long period Bragg grating attenuates the one or more first output signals;

wherein the second long period Bragg grating transmits the one or more second output signals to an optical component.

6. The apparatus of claim 5, wherein the one or more first output signals and one or more second output signals comprise a substantially same first wavelength, wherein the one or more pump optical signals and the one or more residual signals comprise a substantially same second wavelength;

wherein the first long period Bragg grating comprises:

a first cladding;

a first core surrounded by the first cladding, wherein the first core couples one or more of the one or more first output signals to the first cladding to attenuate the one or more of the one or more first output signals; and

a first wavelength attenuation range that comprises the substantially same first wavelength and omits the substantially same second wavelength;

wherein the second long period Bragg grating comprises:

a second cladding;

a second core surrounded by the second cladding, wherein the second core couples one or more of the one or more residual signals to the second cladding to attenuate the one or more of the one or more residual signals; and

a second wavelength attenuation range that omits the substantially same first wavelength and comprises the substantially same second wavelength.

7. The apparatus of claim 6, wherein the first long period Bragg grating attenuates the one or more first output signals to promote a reduction of backreflection of the one or more first output signals.

8. The apparatus of claim 7 in combination with the optical component, wherein the optical component receives the one or more second output signals from the second long period Bragg grating and returns one or more of the one or more second output signals to the second long period Bragg grating;

wherein the first long period Bragg grating promotes a reduction of backreflection of the one or more second output signals through attenuation of the one or more of the one or more second output signals.

9. The apparatus of claim 5 in combination with the optical component, wherein the optical component comprises a fiber optic gyroscope.

10. The apparatus of claim 9, wherein the fiber optic gyroscope comprises a scale factor linearity error;

wherein the second long period Bragg grating attenuates the one or more residual signals to promote a reduction of the scale factor linearity error of the fiber optic gyroscope.

11. The apparatus of claim 4, wherein the one or more residual signals comprise one or more first residual signals, wherein the first optical component redirects the one or more second residual signals and the one or more second output signals back through the second long period Bragg grating, the apparatus further comprising: /

a first optical component optically coupled with the second long period Bragg grating;

wherein the second long period Bragg grating receives the one or more first residual signals, wherein the second long period Bragg grating attenuates one or more of the one or more first residual signals to create one or more second residual signals;

wherein the second long period Bragg grating further attenuates one or more of the one or more second residual signals and transmits the one or more second output signals to a second optical component.

12. The apparatus of claim 11, further comprising:

an optical coupler that is coupled with the second long period Bragg grating; wherein the optical coupler directs the one or more second output signals to the second optical component.

13. The apparatus of claim 1, wherein the one or more light sources, the one or more long period Bragg gratings, and the one or more amplification fibers comprise a portion of a broadband fiber source.

14. The apparatus of claim 1, wherein the one or more amplification fibers comprise one or more erbium-doped fibers.

15. The apparatus of claim 1, wherein the one or more light sources comprise one or more pump diode lasers.

16. The apparatus of claim 1, wherein the one or more long period Bragg gratings comprise a fusion-spliced long period Bragg grating, wherein the fusion-spliced long period Bragg grating is located between the one or more light sources and the one or more amplification fibers.

17. The apparatus of claim 1, wherein the one or more of the one or more long period Bragg gratings comprise a cladding and an optical core surrounded by the cladding;

wherein the optical core couples the one or more of the one or more output signals to the cladding to attenuate the one or more of the one or more output signals.

18. The apparatus of claim 1, wherein the one or more of the one or more long period Bragg gratings promote a reduction of backreflection of the one or more of the one or more output signals through attenuation of the one or more of the one or more output signals.

19. The apparatus of claim 18, wherein the one or more of the one or more light sources cause the backreflection of the one or more of the one or more output signals and create one or more backreflected signals, wherein the one or more of the one or more light sources direct the one or more backreflected signals toward the one or more long period Bragg gratings;

wherein the one or more of the one or more long period Bragg gratings attenuate the one or more backreflected signals to promote a reduction of oscillation of the one or more output signals.

20. A method, comprising the step of:

promoting a reduction of backreflection of one or more output signals from one or more amplification fibers of a broadband fiber source through employment of one or more long period Bragg gratings.

21. The method of claim 20, wherein the step of promoting the reduction of backreflection of the one or more output signals from the one or more amplification fibers of the broadband fiber source through employment of the one or more long period Bragg gratings comprises the step of:

attenuating one or more of the one or more output signals through employment of one or more of the one or more long period Bragg gratings.

22. The method of claim 21, wherein the one or more long period Bragg gratings comprise a first long period Bragg grating and a second long period Bragg grating, the method further comprising the step of:

promoting a reduction of scale factor linearity error for a fiber optic gyroscope through employment of the second long period Bragg grating, wherein the fiber optic gyroscope employs one or more of the one or more output signals.

23. The method of claim 22, wherein the step of promoting the reduction of scale factor linearity error for the fiber optic gyroscope comprises the step of:

attenuating one or more residual signals from a light source of the broadband fiber source.